A.O. SMITH

WATER PRODUCTS COMPANY

PSD-3-153

GAS

COMMERCIAL POWER BURNER BOILER

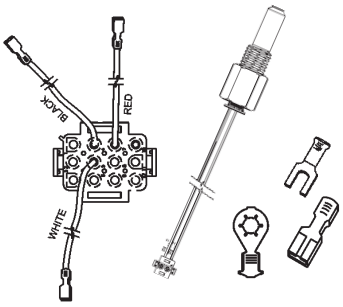
REPLACEMENT PARTS LIST

COPPER BOILERS FOR HYDRONIC HEATING & HOT WATER SUPPLY

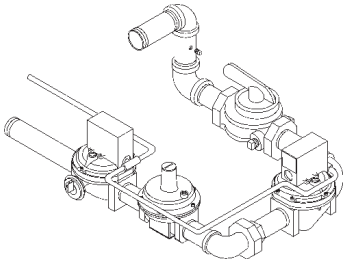
LEGEND MODELS LB/LW: 500, 750 & 1000

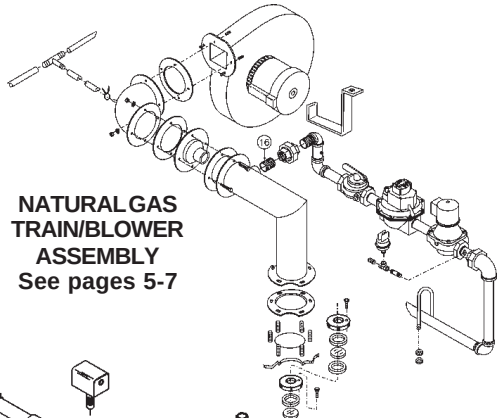
SERIES: 300 - 301

WIRING/HARNESS & PROBES
See page 12

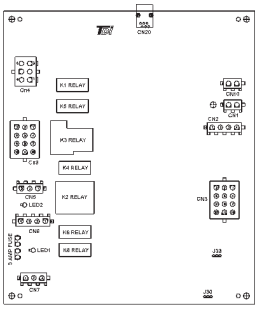


PROPANE GAS TRAIN ASSEMBLY
See pages 8-10



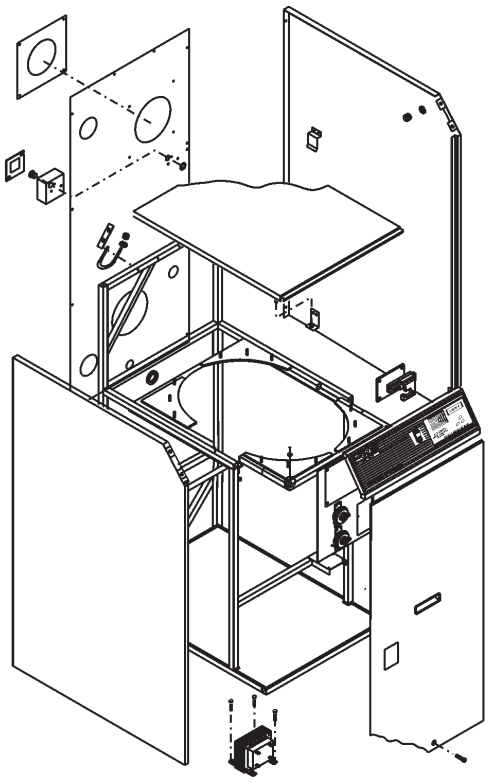


NATURAL GAS TRAIN/BLOWER ASSEMBLY
See pages 5-7

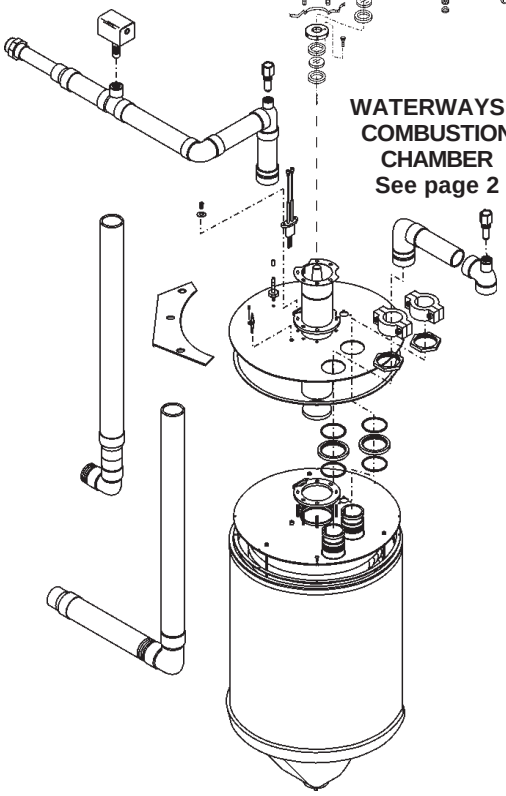


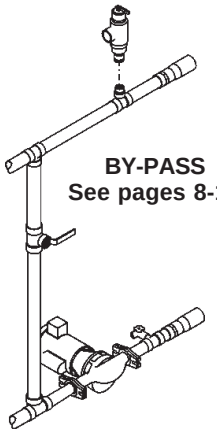
CONTROL BOARD
See page 11

JACKET/FRAME ASSEMBLY
See page 4

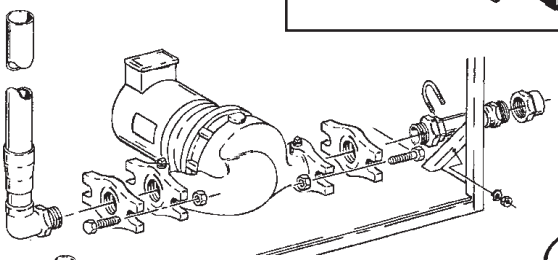


WATERWAYS & COMBUSTION CHAMBER
See page 2

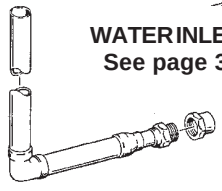




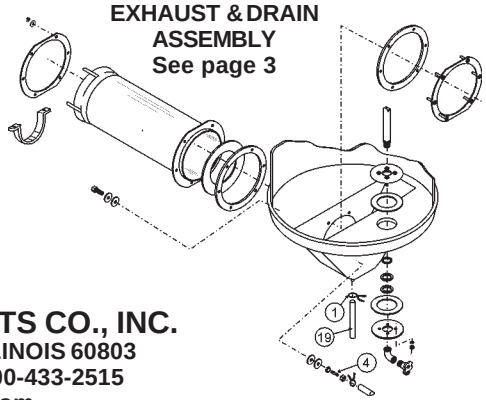
BY-PASS
See pages 8-10



WATER INLET
See page 3



EXHAUST & DRAIN ASSEMBLY
See page 3



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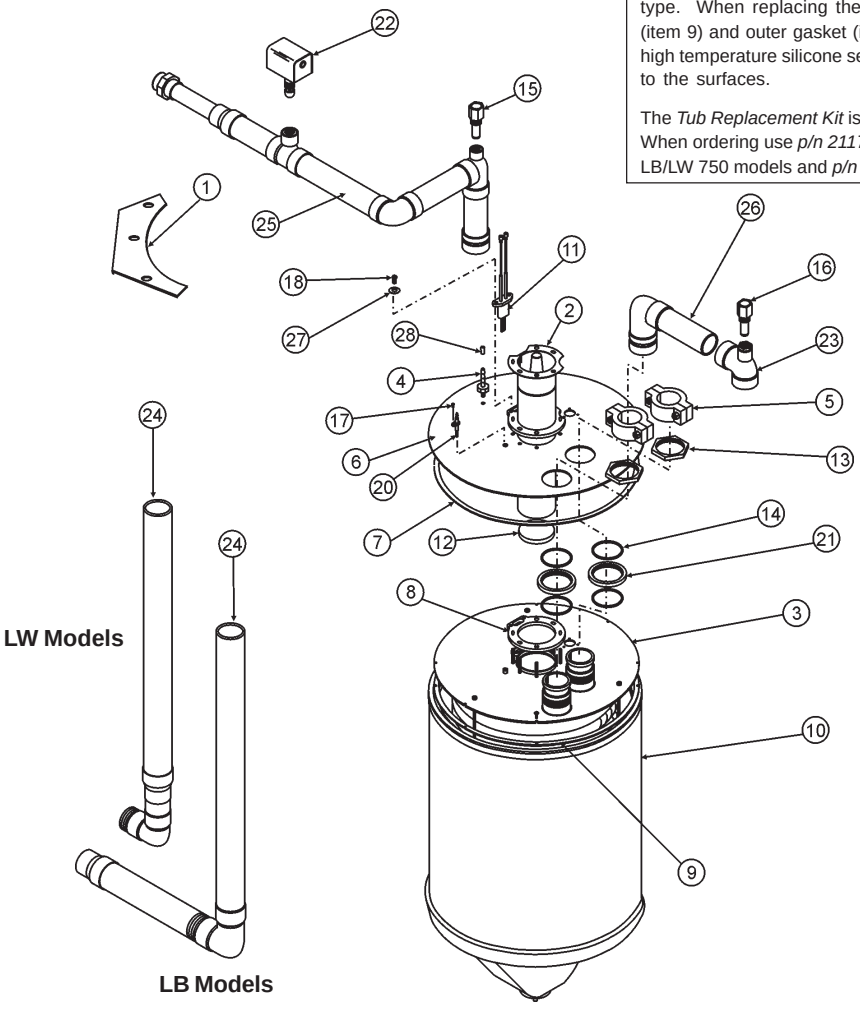
LB/LW WATERWAYS & COMBUSTION CHAMBER PARTS LIST

Item	Description	Model 500	Model 750	Model 1000
1	Bracket	191602	191602	191602
2	Burner and Cone Assembly	191850	191850-1	191850-2
3	Combustion Chamber Assembly	191529-2	191529-3	192129-1
4	Connector, Hose	191765	191765	191765
5	Coupling, Flexible w/Gasket	191780	191780	191780-1
6	Cover, Outer	210408	210408	210404
7	Gasket, Outer	211594-1	211594-1	211594-1
8	Gasket, Burner	191564-1	191564-1	191564-1
9	Gasket, Inner	211594	211594	211594
10	Housing Assembly	211742	211742-1	211742-2
11	Ignitor	192334	192334	192334
12	Insulation, Burner	191618	191618	191618
13	Nut, Manifold	191555	191555	191555-1
14	O-Ring	191556	191556	191556-2
15	Probe, Outlet Temp./ECO	210572	210572	210572
16	Probe, Inlet Temp.	210571	210571	210571
17	Screw, Machine #8-32, 3/8" Long, SST	210444	210444	210444
18	Screw, Machine #8-32, 1" Long SST	191770	191770	191770
*19	Sealer, Silicone Hi-Temp	191482-1	191482-1	191482-1
20	Sensor, Flame	210421	210421	210421
21	Spacer Ring	191554	191554	191554-1
22	Switch, Safety Flow	211480	211480	211480
23	Tee Assembly	191583	191583	192387
24	Tube Assembly, Primary (LW Models)	210900	210900	192388
24	Tube Assembly, Primary (LB Models)	210901	210901	192225
25	Tube Assembly, Outlet	210425	210425	210426
26	Tube Assembly, Secondary	210912	210912	192386
27	Washer, Flat #8 SST	191768	191768	191768
28	Restrictor-Air, Top Cover	191926-1	191926-1	191926-1

*Item Not Illustrated.

Note: Replacement housing assemblies (item 10) are currently all steel type. When replacing the housing assembly both the inner gasket (item 9) and outer gasket (item 7) must also be replaced. In addition, high temperature silicone sealant (item 19) is required to fix the gaskets to the surfaces.

The *Tub Replacement Kit* is available for replacing housing assemblies. When ordering use *p/n 211742* for LB/LW 500 models, *p/n 211742-1* for LB/LW 750 models and *p/n 211742-2* for LB/LW 1000 models.



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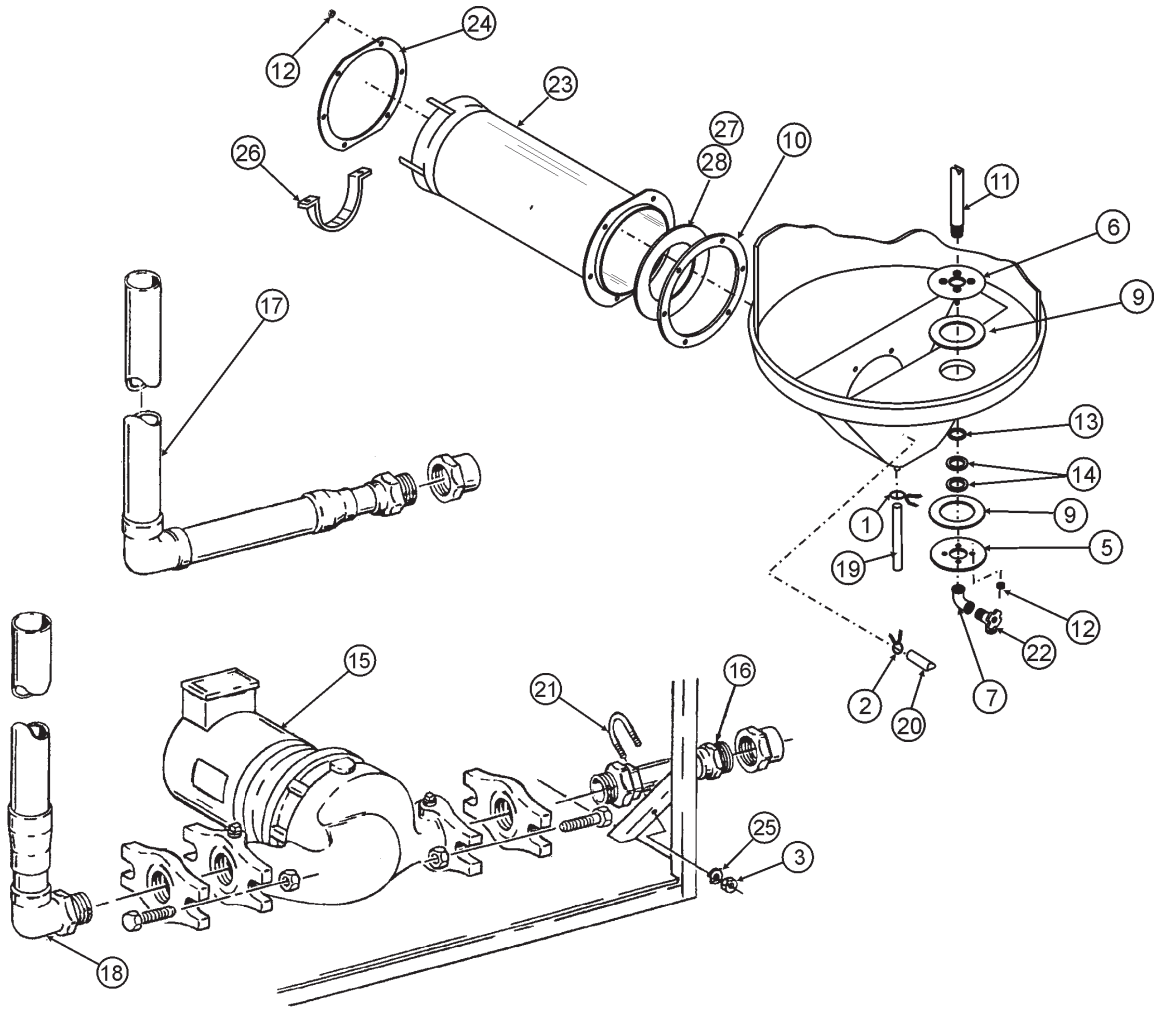
LB/LW EXHAUST, DRAIN & WATER INLET ASSEMBLY PARTS LIST

Item	Description	Model 500	Model 750	Model 1000
1	Clamp, Hose (Large)	191794-1	191794-1	191794-1
2	Clamp, Hose (Small)	191794-3	191794-3	191794-3
3	Nut, Hex	191817-1	191817-1	191817-1
5	Drain, Flange	191620	191620	191620
6	Drain, Flange Assembly	191625	191625	191625
7	Elbow	191664	191664	191664
9	Gasket, Drain	191622	191622	191622
10	Gasket, Vent	191683	191683	191683-1
11	Nipple	20373-15	20373-15	20373-18
12	Nut, Hex 1/4" (Serrated)	210226	210226	210226
13	O-Ring	191556-1	191556-1	191556-1
14	Plate, Drain Seal	191626	191626	191626
15	Pump Assembly, Circulator (LW Models)	211611	211612	211538
16	Tube Assembly, Inlet (LW Models)	210897-1	210897-2	192308
17	Tube Assembly, Primary (LB Models)	210901	210901	192225
18	Tube Assembly, Primary (LW Models)	210900	210900	192388
19	Tubing, Condensate	191746-24	191746-24	191746-24
20	Tubing, Pressure	191562-26	191562-26	191562-26
21	U-Bolt Assembly	191938	191938	191938
22	Valve Drain	26273	26273	26273
23	Vent Assembly	210499	210499	210494
24	Vent Flange	191685-4	191685-4	191685-5
25	Washer, Plain	76820-18	76820-18	76820-18
26	Vent Support, Bracket (1000 Model Only)	-----	-----	192194
27	Vent, Restricting Ring (500 Model Only)	191923-2	-----	-----
28	Vent, Restricting Ring (Series 301 LP)	-----	-----	191923-1



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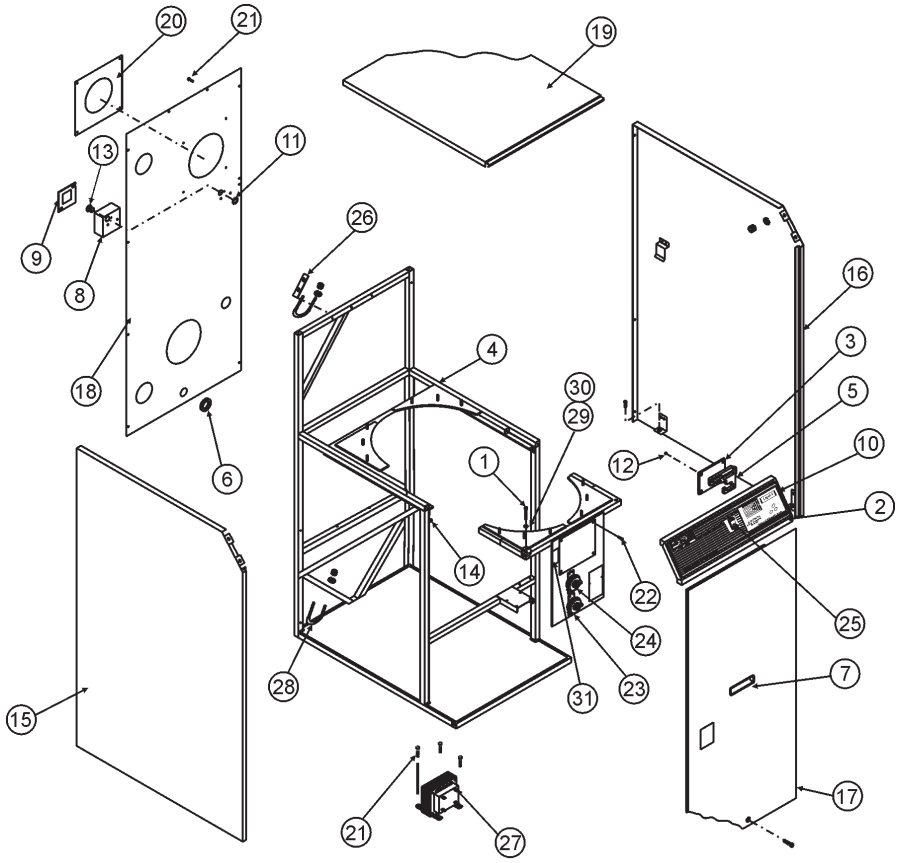
LB/LW JACKET/FRAME ASSEMBLY

Item	Description	Model 500	Model 750	Model 1000
1	Bolt, Machine 5/16" - 18	191358-1	191358-1	191358-2
2	Control Panel Assembly	210601-1	210601-1	210601
3	Display Board	210219	210219	210219
4	Frame Assembly	210495	210495-1	210501-1
5	Gasket, Dispaly	210130	210130	210130
6	Grommet	97591	97591	97591
7	Handle	191802	191802	191802
8	Junction Box Assembly	190438-1	190438-1	190438-1
9	Junction Box Cover	2233	2233	2233
10	Label, Control Panel	210561	210561	210561-1
11	Locknut, Star	1953	1953	1953
12	Locknut #6 -32	210207	210207	210207
13	Nipple, Chase	41994	41994	41994
14	Nut, Lock Hex 5/16" - 18 (1000 Model Only)	- - - - -	- - - - -	97896
15	Panel Assembly, Left Side	191796-1	191796-1	191796-3
16	Panel Assembly, Right Side	191796	191796	191796-2
17	Panel, Lower Front	191805	191805	191805-1
18	Panel, Rear (Natural)	191748	191748-1	192191
	Panel Rear (Propane)	191748	191748-4	210020
19	Panel, Top Cover	191609	191609	191609-1
20	Plate, Rear Cover (1000 Model Only)	- - - - -	- - - - -	210214
21	Screw, Hex Head 5/16"	210125	210125	210125
22	Screw, Hex Head #6-32	210206	210206	210206
23	Switch, Blower Prover	191666	191666	191666
24	Switch, Blocked Flue	191667	191667	191667
25	Switch, Rocker	191665	191665-1	191665-1
26	Support Bracket (Propane Only)	- - - - -	210019	210017
27	Transformer (75VA)	192528	192528	- - - - -
	Transformer (100VA)	- - - - -	- - - - -	210449
28	U-Bolt Assembly (Water way)	191938	191938	191938
29	Washer, Flat	191359	191359	191359
30	Washer, Lock	191480	191480	191480
31	Switch, Relay	- - - - -	211546	211546
32	Blower Speed Control	191922	- - - - -	- - - - -
33	Control Bracket Assembly	210902	210902-3	192167-2



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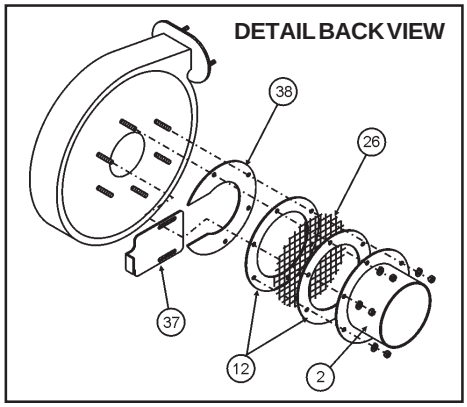
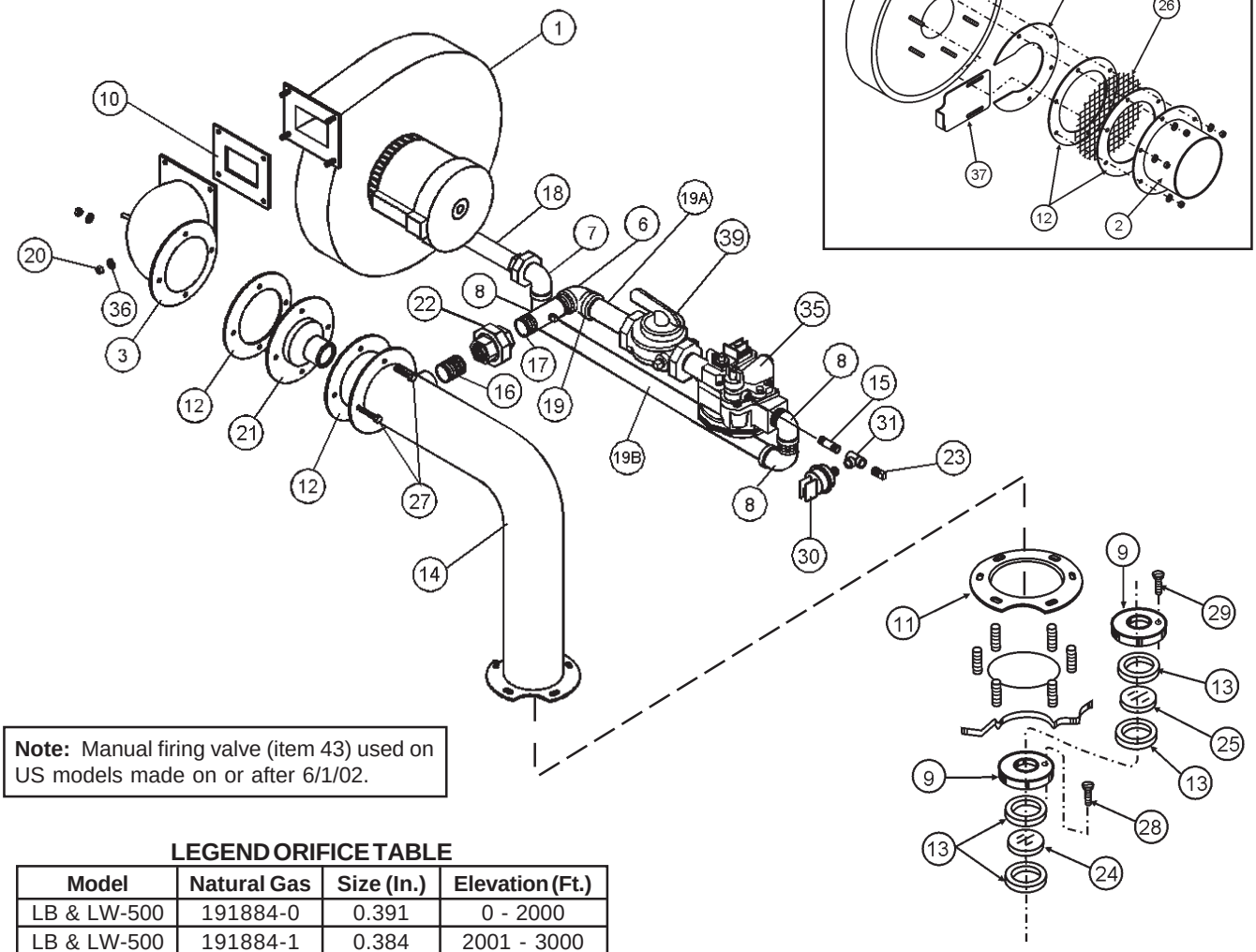
LB/LW NATURAL GAS TRAIN/BLOWER ASSEMBLY- MODEL 500

Item	Description	Model 500
1	Blower	211613
2	Blower Adapter Assembly	191645
3	Blower Manifold Assembly	191832
*4	Bracket, Blower	191773
*5	Clamp, Hose	191794
6	Elbow, 1"	1630
7	Elbow, Union 1"	2482-1
8	Elbow, Street 1"	190763
9	Flange, Observation Port	191573
10	Gasket, Blower	191623
11	Gasket, Burner	191564
12	Gasket, Manifold	191565
13	Gasket, Port (1/8" Thick)	191576
14	Manifold Assembly	191610
15	Nipple, Close 1/8"	191147-1
16	Nipple, Close Stainless	191772
17	Nipple, Tapped	86397-11
18	Nipple, 1" x 9 1/2"	86397
19	Nipple, 1" x 2"	1177
19A	Nipple, Pipe 1"x2 1/2"	1179
19B	Nipple, Pipe 1"x14 1/2"	86397-6
20	Nut, Hex 1/4"	170272
21	Orifice, Air	192737
22	Orifice, Union (See Orifice Table Below)	
23	Plug, 1/8" Pipe	3348
24	Port, Observation Lower	191572
25	Port, Observation Upper	191572-1
26	Screen, Air Inlet	192041
27	Screw, Cap 1/4"	190960-2
28	Srew, Flathead #8-32 x 1/2"	191542
29	Screw, Flathead #8-32 x 3/4"	191542-1
30	Switch, Low Pressure	191149-1
31	Tee, 1/8"	40119
*32	Tee, Union	191633
*33	Tubing, Pressure	191562
*34	U-Bolt Assembly	191938-1
35	Valve, Main Gas	191956
36	Washer, Lock 1/4"	1006
37	Shutter, Blower	211694
38	Flange, Shutter	211695
39	Manual Firing Valve	3423-4

*Item Not Illustrated.





Note: Manual firing valve (item 43) used on US models made on or after 6/1/02.

LEGEND ORIFICE TABLE

Model	Natural Gas	Size (In.)	Elevation (Ft.)
LB & LW-500	191884-0	0.391	0 - 2000
LB & LW-500	191884-1	0.384	2001 - 3000
LB & LW-500	191884-2	0.374	3001 - 4000

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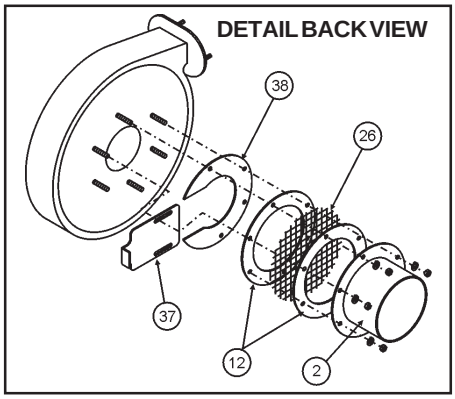
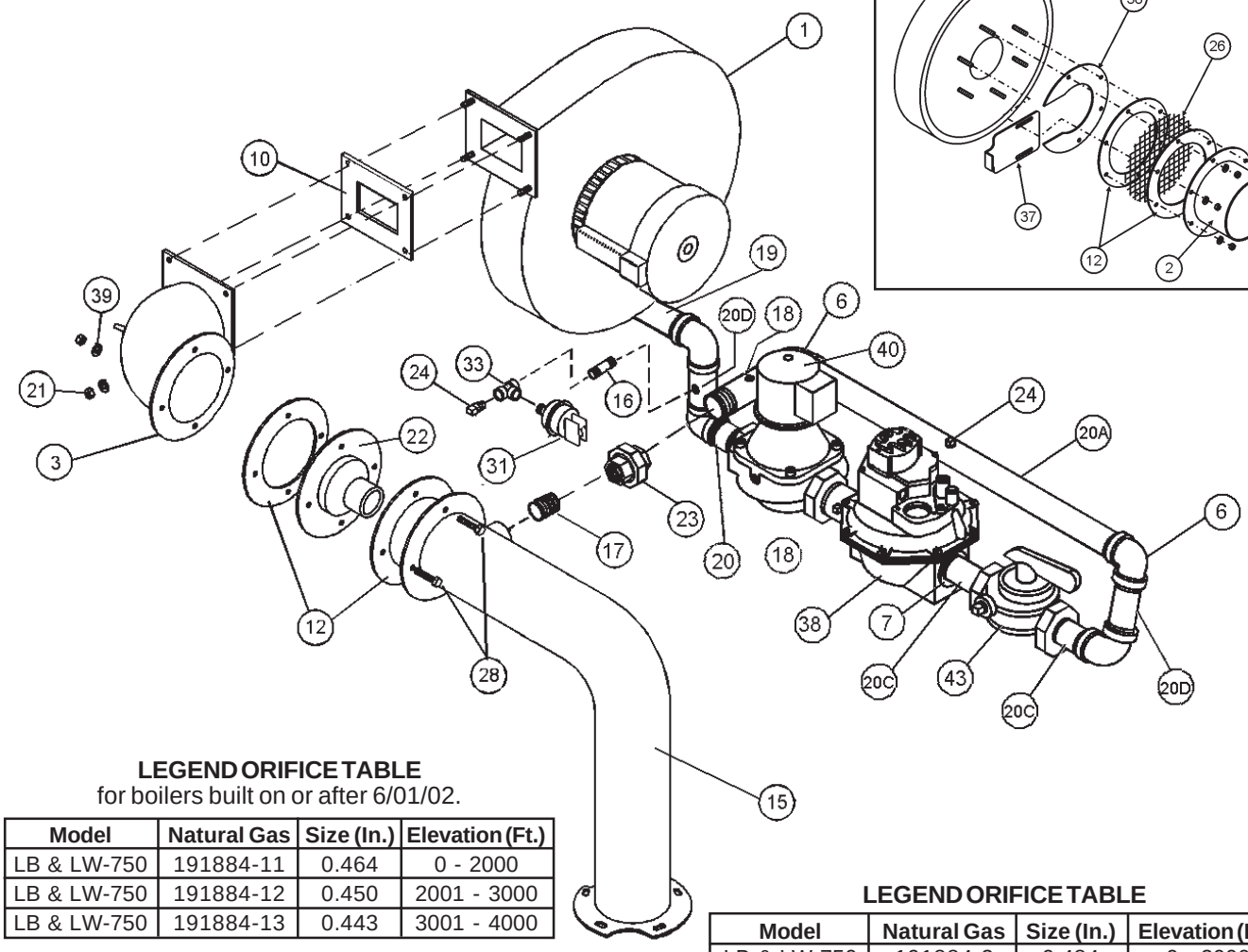
LB/LW NATURAL GAS TRAIN/BLOWER ASSEMBLY- MODEL 750

Item	Description	Model 750
1	Blower	211614
2	Blower Adapter Assembly	191645
3	Blower Manifold Assembly	191832
*4	Bracket, Blower	191773
*5	Clamp, Hose	191794
6	Elbow, 1"	1630
7	Face Bushing 1"x1 1/4"	99376
*9	Flange, Observation Port	191573
10	Gasket, Blower	191623
*11	Gasket, Burner	191564
12	Gasket, Manifold	191565
*13	Gasket, Port (1/8" Thick)	191576-1
*14	Gasket, Port (1/16" Thick)	191576
15	Manifold Assembly	191610
16	Nipple, Close 1/8"	191147-1
17	Nipple, Close Stainless	191772
18	Nipple, 1x4 1/2" with Tap	86397-14
19	Nipple, 1" x 9 1/2"	86397
20	Nipple, 1" x 2"	1177
20A	Nipple, 1"x15 1/2"	86397-13
20B	Nipple, 1 1/4" x 2"	86505-29
20C	Nipple, 1"xClose	1342
20D	Nipple, 1"x4"	86397-7
21	Nut, Hex 1/4"	170272
22	Orifice, Air	192737-1
23	Orifice, Union (See Orifice Table Below)	
24	Plug, 1/8" Pipe	3348
*25	Port, Observation Lower	191572
*26	Port, Observation Upper	191572-1
27	Screen, Air Inlet	192041
*28	Screw, Cap 1/4"	190960-2
*29	Srew, Flathead #8-32 x 1/2"	191542
*30	Screw, Flathead #8-32 x 3/4"	191542-1
31	Switch, Low Pressure	191149-1
33	Tee, 1/8"	40119
*34	Tee, Union	191633
*35	Tubing, Pressure	191562
*36	Tubing, Top Cover Assembly	191925
*37	U-Bolt Assembly	191938-1
38	Valve, Main Gas	78481-3
*39	Washer, Lock 1/4"	1006
40	Valve, Solenoid Gas	192189
41	Shutter, Blower	211694
42	Flange, Shutter	211695
43	Manual Firing Valve	3423-4

*Item Not Illustrated.





LEGEND ORIFICE TABLE
for boilers built on or after 6/01/02.

Model	Natural Gas	Size (In.)	Elevation (Ft.)
LB & LW-750	191884-11	0.464	0 - 2000
LB & LW-750	191884-12	0.450	2001 - 3000
LB & LW-750	191884-13	0.443	3001 - 4000

Note: Manual firing valve (item 43) used on US models made on or after 6/1/02.

LEGEND ORIFICE TABLE

Model	Natural Gas	Size (In.)	Elevation (Ft.)
LB & LW-750	191884-3	0.484	0 - 2000
LB & LW-750	191884-5	0.469	2001 - 3000
LB & LW-750	191884-7	0.461	3001 - 4000

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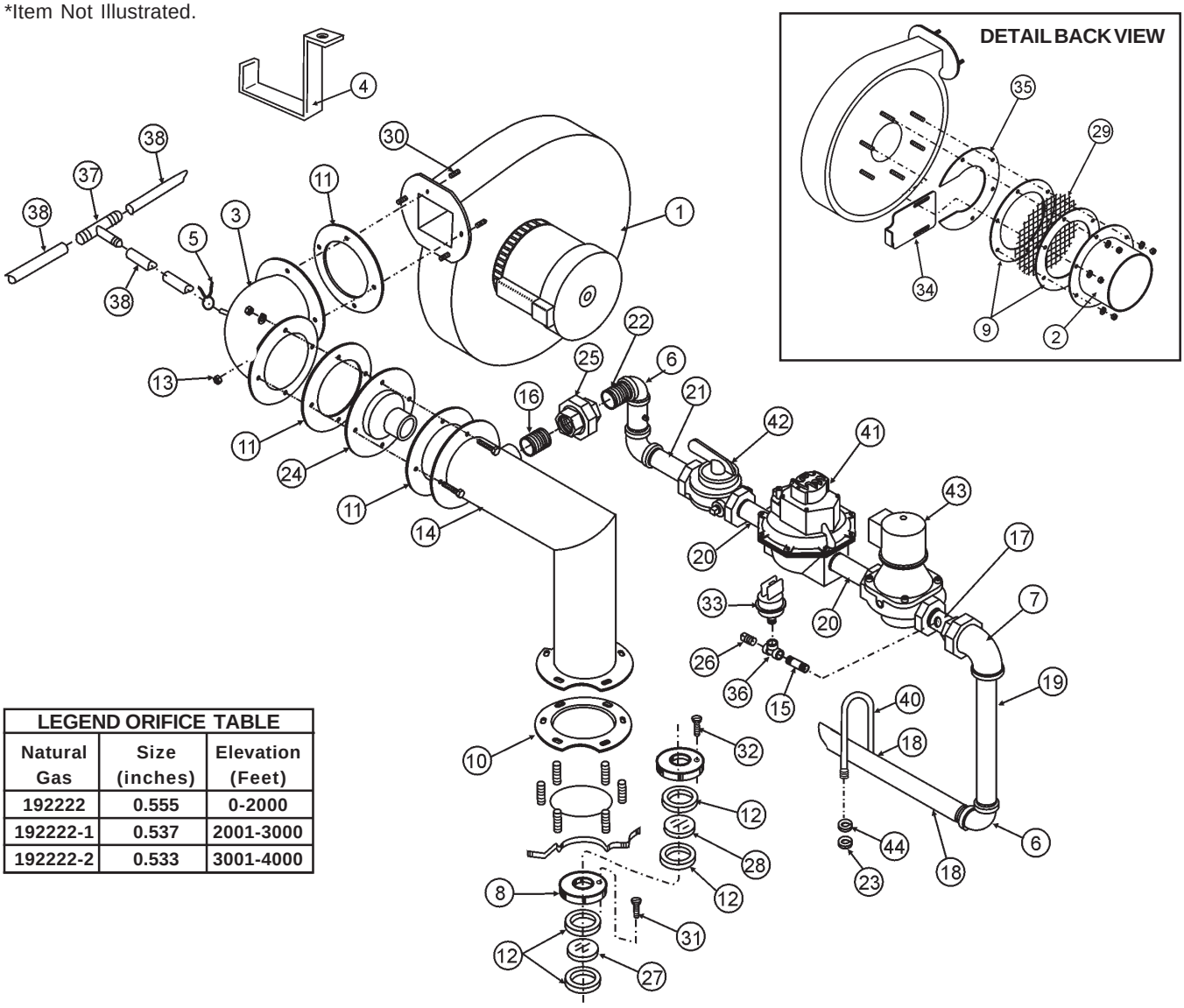
LB/LW NATURAL GAS TRAIN/BLOWER ASSEMBLY - MODEL 1000

Item	Description	Model 1000
1	Blower	192195
2	Blower Adapter Assembly	192215-1
3	Blower Manifold Assembly	192217
4	Bracket, Blower	210214
5	Clamp, Hose	191794-3
6	Elbow, 1-1/4"	192216
7	Elbow, Union 1-1/4"	86506-1
8	Flanged Observation Port	191573
9	Gasket, Blower Air Inlet	192213
10	Gasket, Burner	191564
11	Gasket, Manifold	191565
12	Gasket, Port (1/8" Thick)	191576
13	Nut, Hex 1/4", Serrated	210226
14	Manifold Assembly - Air/Gas	192309
15	Nipple, Close 1/8"	191147-3
16	Nipple, Close Stainless	191772-1
17	Nipple, Tapped	86505-3
18	Nipple, 1-1/4" x 38-1/2"	86505-28
19	Nipple, 1-1/4" x 28-3/4"	86505-27
20	Nipple, 1-1/4" x 2"	86505
21	Nipple, 1-1/4" x 3"	86505-2
22	Nipple, 1-1/4" x 4"	86505-6
23	Nut, Hex 1/4"	191817-1
24	Orifice, Air (Series 300 - Nat. Gas)	192737-3
24	Orifice, Air (Series 30211 - L.P. Gas)	192737-2
25	Orifice, Union (See Orifice Table Below)	
26	Plug, 1/8" Pipe	3348
27	Port, Observation Lower	191572
28	Port, Observation Upper	191572-1
29	Screen, Air Inlet	192220-1
30	Screw, Cap 1/4"	190960-2
31	Srew, Flathead #8-32 x 1/2"	191542
32	Screw, Flathead #8-32 x 3/4"	191542-1
33	Switch, Low Pressure	191149-1
34	Shutter, Blower	192593
35	Shutter Flange	192592
36	Tee, 1/8"	40119
37	Tee, Pressure	191633
38	Tubing, Pressure	191562
40	U-Bolt Assembly (Gas Train)	191938-3
41	Valve, Main Gas	78481-3
42	Valve, Firing	3423-3
43	Valve, Solenoid Gas	192189
44	Washer, Plain	76820-18
42	Manual, Shut-off Valve	211695

*Item Not Illustrated.



LEGEND ORIFICE TABLE		
Natural Gas	Size (inches)	Elevation (Feet)
192222	0.555	0-2000
192222-1	0.537	2001-3000
192222-2	0.533	3001-4000

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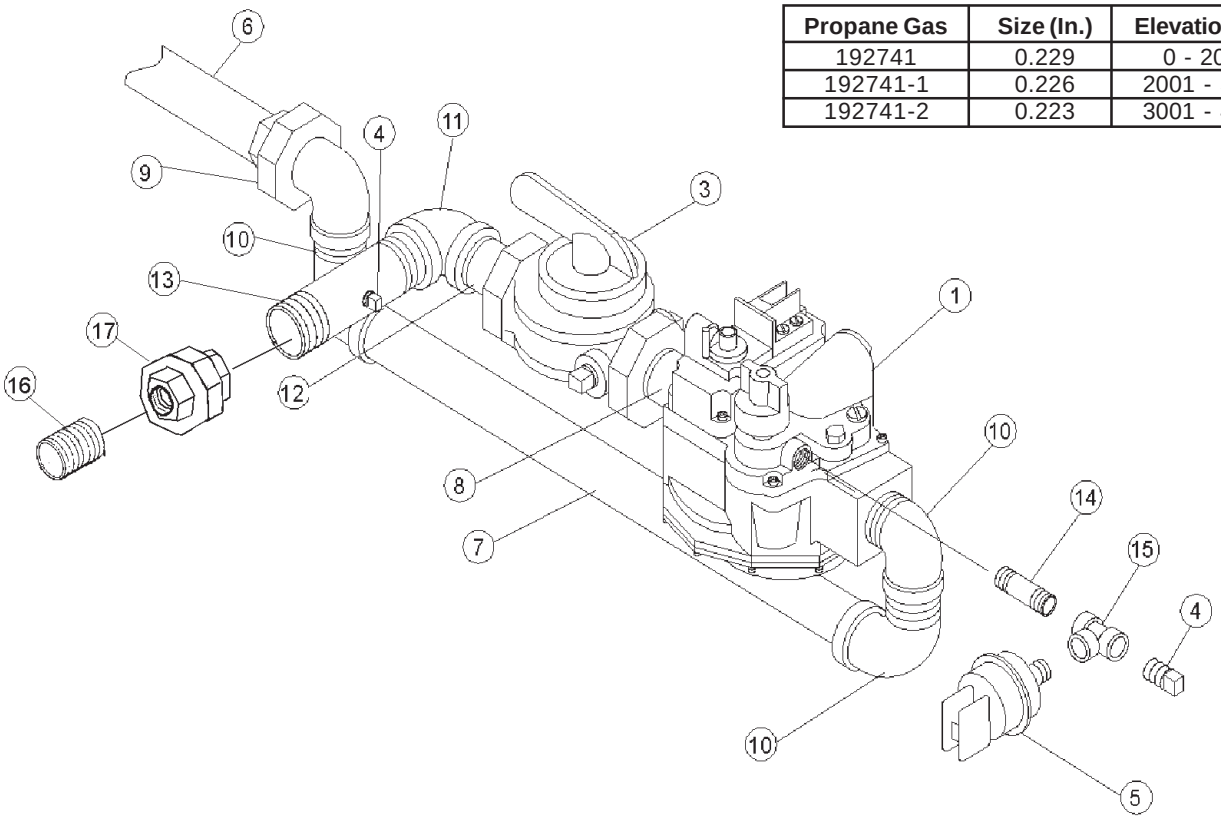
LB/LW PROPANE GAS TRAIN ASSEMBLY - MODEL 500

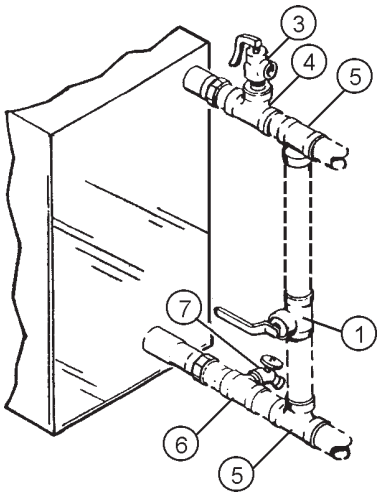
Item	Description	Model 500
1	Valve, Main Gas	191956-1
2	Regulator, LP	- - - - -
3	Valve, Manual Shut-Off	3423-4
4	Pipe Plug	3348
5	Switch, Low Gas Pressure	191149-3
6	Nipple, 1"	86397
7	Nipple, 1"	85397-6
8	Nipple, 1"	1177
9	Elbow, Union, 1"	2482-1
10	Elbow, 90° Street, 1"	190763
11	Elbow, 90°, 1"	1630
12	Nipple, 1"	1179
13	Nipple, 1"	86397-11
14	Nipple, 1/8"	191147-1
15	Tee, 1/8"	40119
16	Nipple, Close Stainless	191772
17	Orifice, Union	See Orifice Table Below

LB/LW 500 ORIFICE TABLE

Propane Gas	Size (In.)	Elevation (Ft.)
192741	0.229	0 - 2000
192741-1	0.226	2001 - 3000
192741-2	0.223	3001 - 4000



On LB models the circulating pump must be between the boiler inlet and the bypass (see figure below). LW models have pump mounted inside the jacket.



LB/LW BY-PASS PARTS LIST - MODEL 500

Item	Description	Model 500
1	Ball Valve	191935
2	Hex Reducing Bushing LW Models (for use w/Relief Valve)	91940-1
3	Relief valve:	
	LB Model	210451
	LW Model	98883-3
4	Tee, 2" x 2" x 1"	78685-2
5	Tee, 2"	191584
6	Tee, 2" x 2" x 2"	78685-4
7	Valve, Drain	26273
*8	Valve, Manual Shutoff	- - - - -
*9	Orifice, Gas Assembly (See Orifice Table)	
*10	Tube, Condensate	191746-120
*11	Strap, Cable	99592-2

*Item Not Illustrated.

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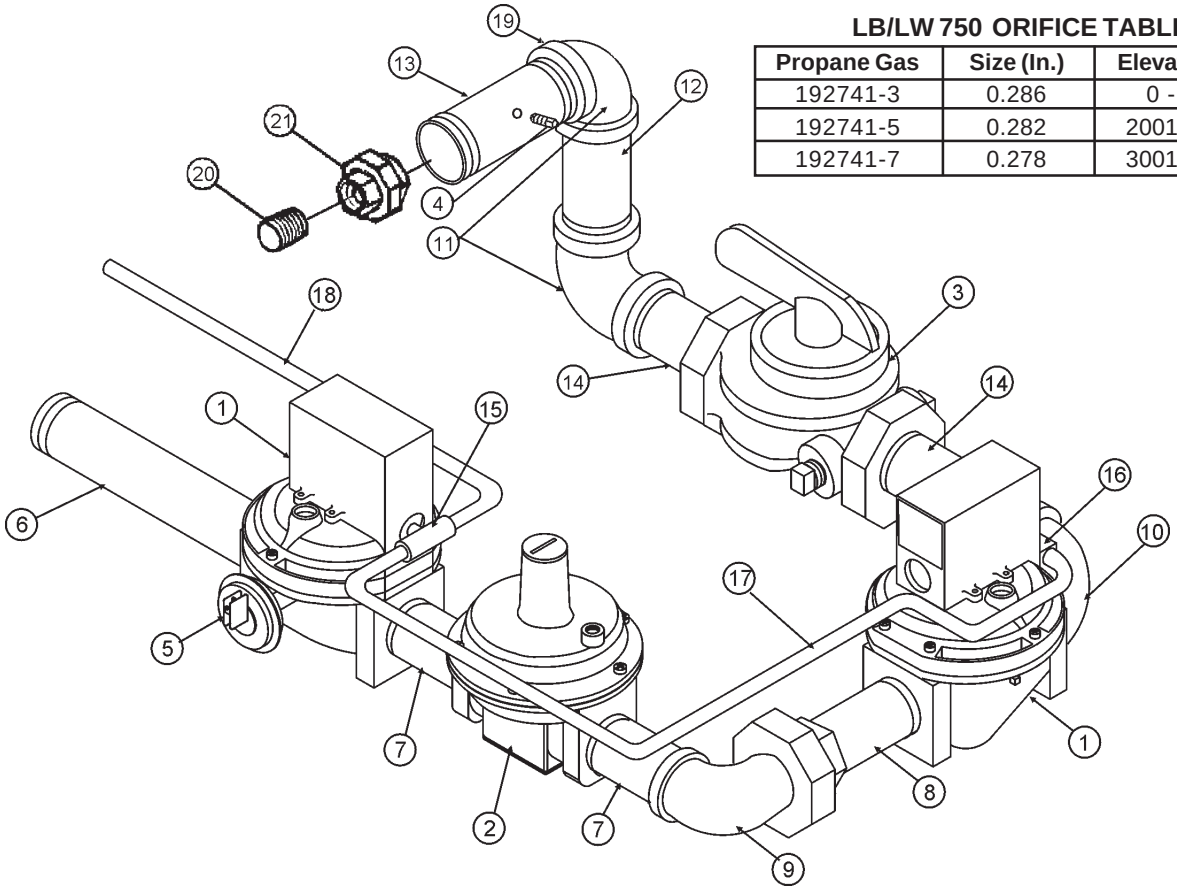
LB/LW PROPANE GAS TRAIN ASSEMBLY - MODEL 750

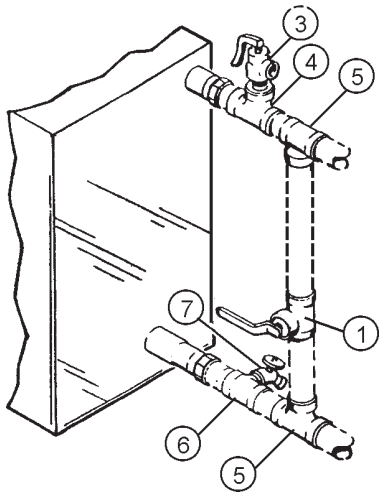
Item	Description	Model 750
1	Valve, Main Gas	77780
2	Regulator, LP	192460
3	Valve, Manual Shut-Off	3423-3
4	Pipe Plug	3348
5	Switch, Low Gas Pressure	191149-3
6	Nipple, 1-1/4"	86505-8
7	Nipple, 1-1/4	86505-2
8	Nipple, 1-1/4"	86505-10
9	Elbow, Union ,1-1/4"	86506
10	Elbow, 90° Street , 1-1/4"	94516
11	Elbow, 90°, 1-1/4"	192216
12	Nipple, 1-1/4"	86505-3
13	Nipple, 1-1/4"	86397-11
14	Nipple, 1-1/4"	86505-4
15	Tee, 1/8"	192465
16	Connector, Angle 1/8"	1578
17	Bleeder, Tube	210016
18	Bleeder, Tube	192461
19	Bushing, 1" x 1-1/4"	99376
20	Nipple, Close Stainless	191772
21	Orifice, Union	See Orifice Table Below



LB/LW 750 ORIFICE TABLE

Propane Gas	Size (In.)	Elevation (Ft.)
192741-3	0.286	0 - 2000
192741-5	0.282	2001 - 3000
192741-7	0.278	3001 - 4000

On LB models the circulating pump must be between the boiler inlet and the bypass (see figure below). LW models have pump mounted inside the jacket.



LB/LW BY-PASS PARTS LIST - MODEL 750

Item	Description	Model 750
1	Ball Valve	191935
2	Hex Reducing Bushing LW Models (for use w/Relief Valve)	91940-1
3	Relief valve:	
	LB Model	210451-1
	LW Model	98883-3
4	Tee, 2" x 2" x 1"	78685-2
5	Tee, 2"	191584
6	Tee, 2" x 2" x 2"	78685-4
7	Valve, Drain	26273
*8	Valve, Manual Shutoff	3423-3
*9	Orifice, Gas Assembly (See Orifice Table)	
*10	Tube, Condensate	191746-120
*11	Strap, Cable	99592-2

*Item Not Illustrated.

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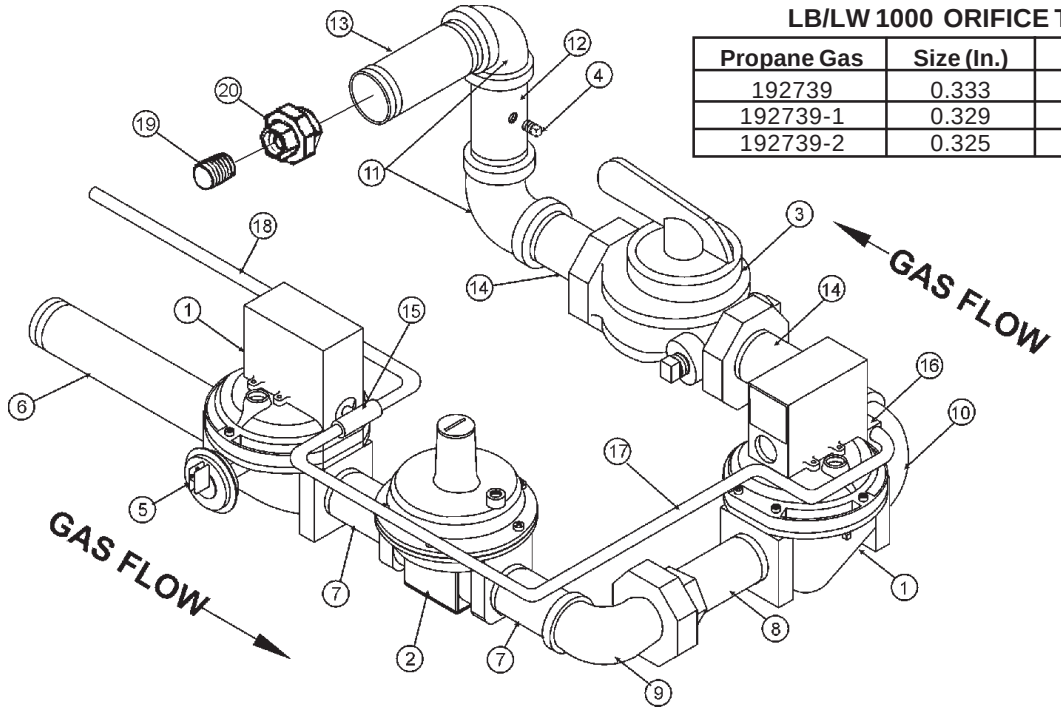
LB/LW PROPANE GAS TRAIN ASSEMBLY - MODEL 1000

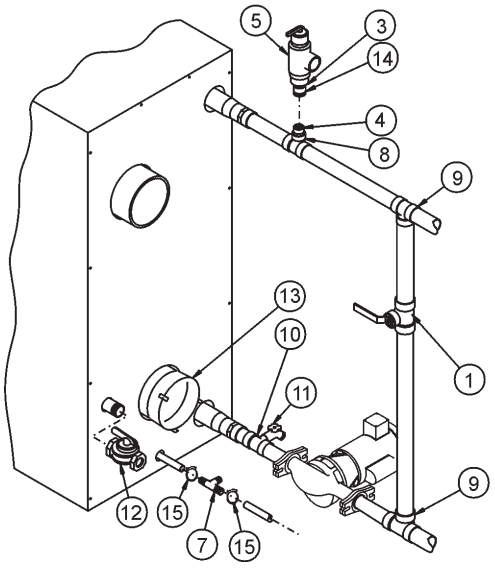
Item	Description	Part No.
1	Valve, Main Gas, LP 300 Series	77780
2	Regulator, LP 301 Series	192460
3	Valve, Firing	3423-3
4	Pipe Plug	3348
5	Switch, Low Gas Pressure	191149-3
6	Nipple, 1-1/4”	86505-13
7	Nipple, 1-1/4”	86505-2
8	Nipple, 1-1/4”	86505-17
9	Elbow, Union 1-1/4”	86506
10	Elbow, 90 Street 1-1/4”	94516
11	Elbow, 90 1-1/4”	192216
12	Nipple, 1-1/4” w/Tapping	86505-32
13	Nipple, 1-1/4”	86505-6
14	Nipple, 1-1/4”	86505-4
15	Tee, 1/8” NPT Branch	192465
16	Connector, Angle 1/8”	1578
17	Bleeder, Tube	210016
18	Bleeder, Tube	192461
19	Nipple, Close Stainless	191772-1
20	Orifice, Union	See Orifice Table Below



LB/LW 1000 ORIFICE TABLE

Propane Gas	Size (In.)	Elevation (Ft.)
192739	0.333	0 - 2000
192739-1	0.329	2001 - 3000
192739-2	0.325	3001 - 4000

On LB models the circulating pump must be between the boiler inlet and the bypass (see figure below). LW models have pump mounted inside the jacket.



LB/LW BY-PASS PARTS LIST - MODEL 1000

Item	Description	Part No.
1	Ball Valve	191935
*2	Tank/Pump Kit (LW Models)	210625
3	Hex Reducing Bushing (LB Model)	91940-8
4	Flush Bushing (LB Model)	192163-2
5	Relief Valve (LW Model)	98883-3
	Relief Valve (LB Model)	210451-2
6	Strap, Cable (not shown)	99592-2
7	Tee, Condensate	192040-1
8	Tee (For use w/relief valve):	
	LW Model	78685-4
	LB Model	191584
9	Tee 2"x2"x2"	191584
10	Tee 2"x2"x3/4"	78685-4
11	Valve, Drain	26273
12	Valve, Manual Shutoff	3423-3
13	Vent Patch Assembly	192161
14	Nipple (For use w/relief valve)	
	LW Model	20373-12
	LB Model	92706-4
15	Clamp, Hose	191794-1

*Item Not Illustrated.

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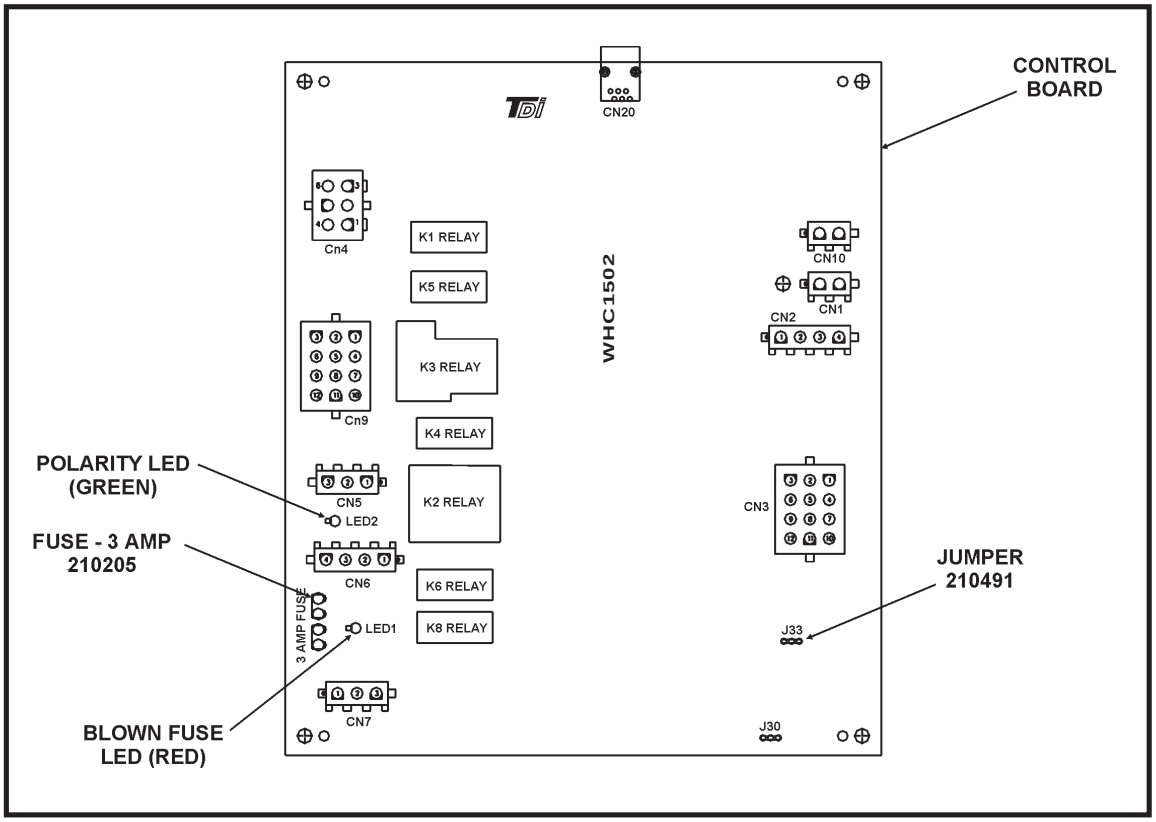
LB/LW CONTROL BOARD WHC 1502

Part Number 210128



LB/LW WIRING CHART

COLOR	GAUGE	PART NUMBER ***
White	14	41974
Black	14	99650
Green	14	41972
White	16	86580
Black	16	86578
Green	16	69058
White	18	170595
Black	18	170596
Green	18	170606
Blue	18	191719
Red	18	170603
Yellow	18	170604
Brown	18	170890
White/Red	18	191700
White/Yellow	18	191702
White/Black	18	191699
Black/White	18	191694
Yellow/Blue	18	191708
Red/Green	18	191717

*** Use dash number to indicate length of wire.
Example: 20 inch long red wire would be expressed as 170603-20.

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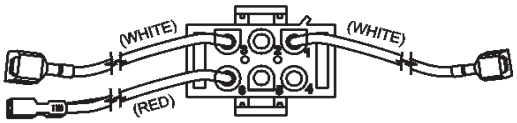
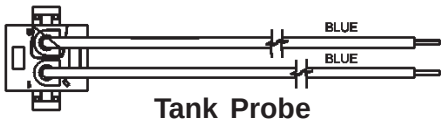
LB/LW WIRING AND HARNESS ASSEMBLY

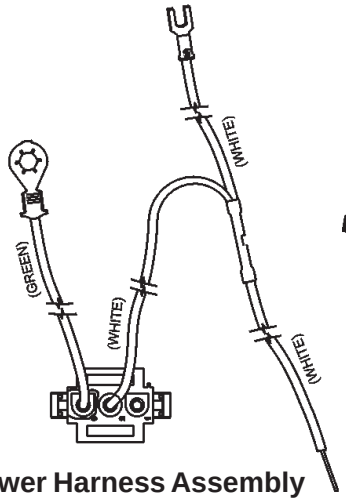
78468	99593-6	78469	191673	42573	210091	210152	99599-2
22-16 Ga.	16-14 Ga.	22-18 Ga.		#10 Stud			22-18 Ga.



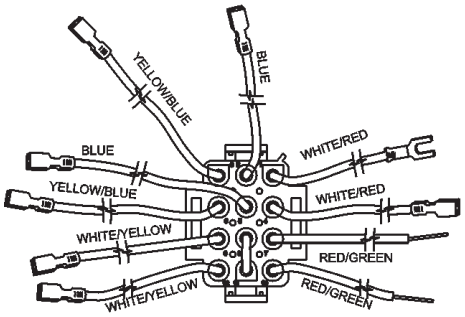
Ignition Harness Assembly 210575



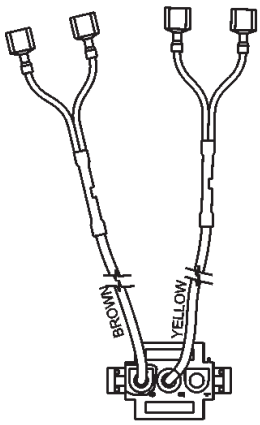
Tank Probe Harness Assembly 210604



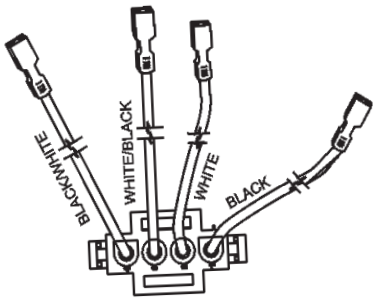
Power Harness Assembly 210579-1 (-0 0n -500 Models Only)



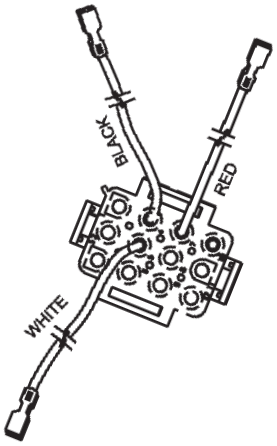
Pressure Flow Switch Harness Assembly 210576



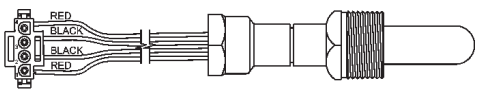
Gas Valve Harness Assembly 210574-1 (Propane) 210574-2 (Nat. & Prop. Model 500)



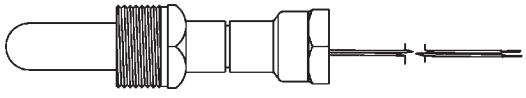
Transformer Harness Assembly 210578 (Model 1000) 211330 (Models 500 & 750)



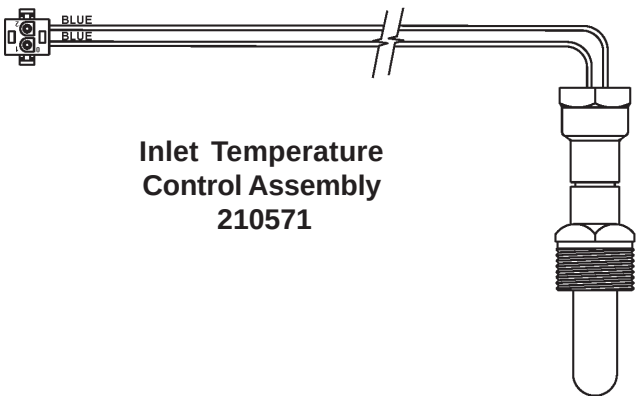
Blower Harness Assembly 210609 (Model 1000)



Outlet Temperature Control/ ECO Assembly 210572



Tank Probe (LW Models) 211541-1



Inlet Temperature Control Assembly 210571

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